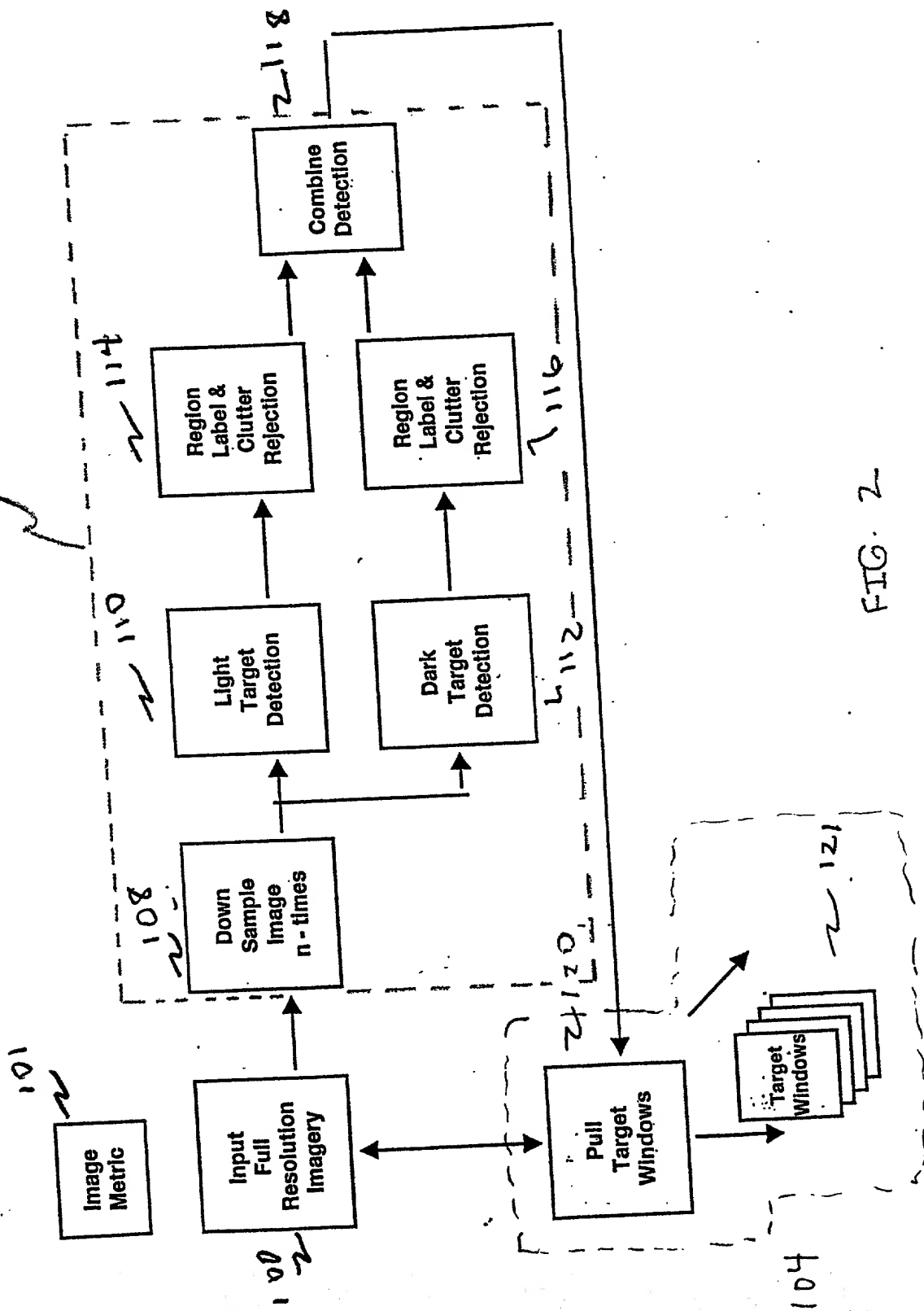
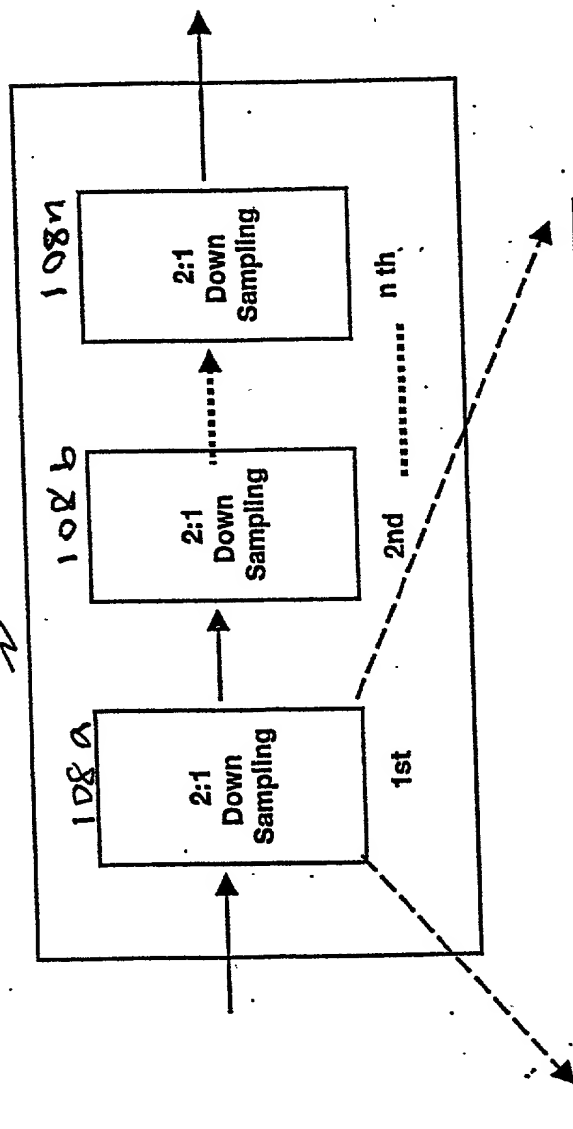


FIG. 1



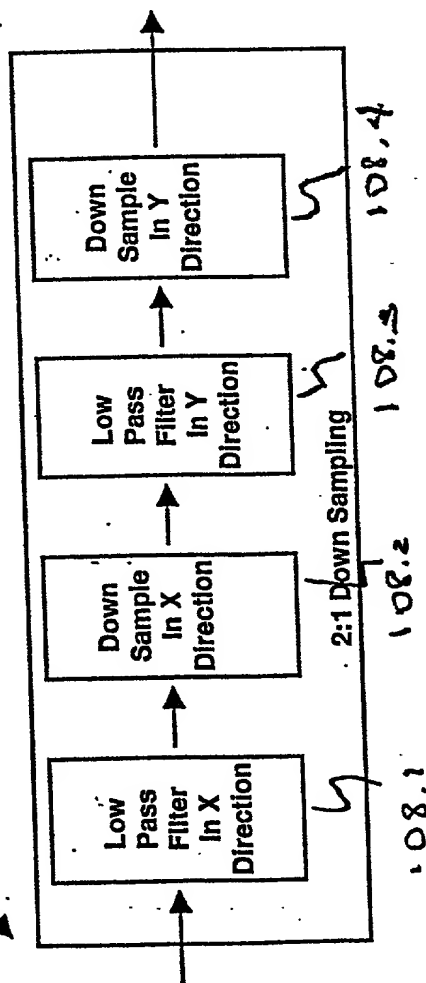
108  
2



1	4	6	4	1
4	16	24	16	4
6	24	36	24	6
4	16	24	16	4
1	4	6	4	1

304  
2

Full  
6 by 6  
Convolution  
Filter



108.1

108.2

108.3

108.4

X Direction Filter

1	4	6	4	1
---	---	---	---	---

301  
2

1	4	6	4	1
---	---	---	---	---

302  
2

Y Direction Filter

FIG. 3A

FIG. 3B

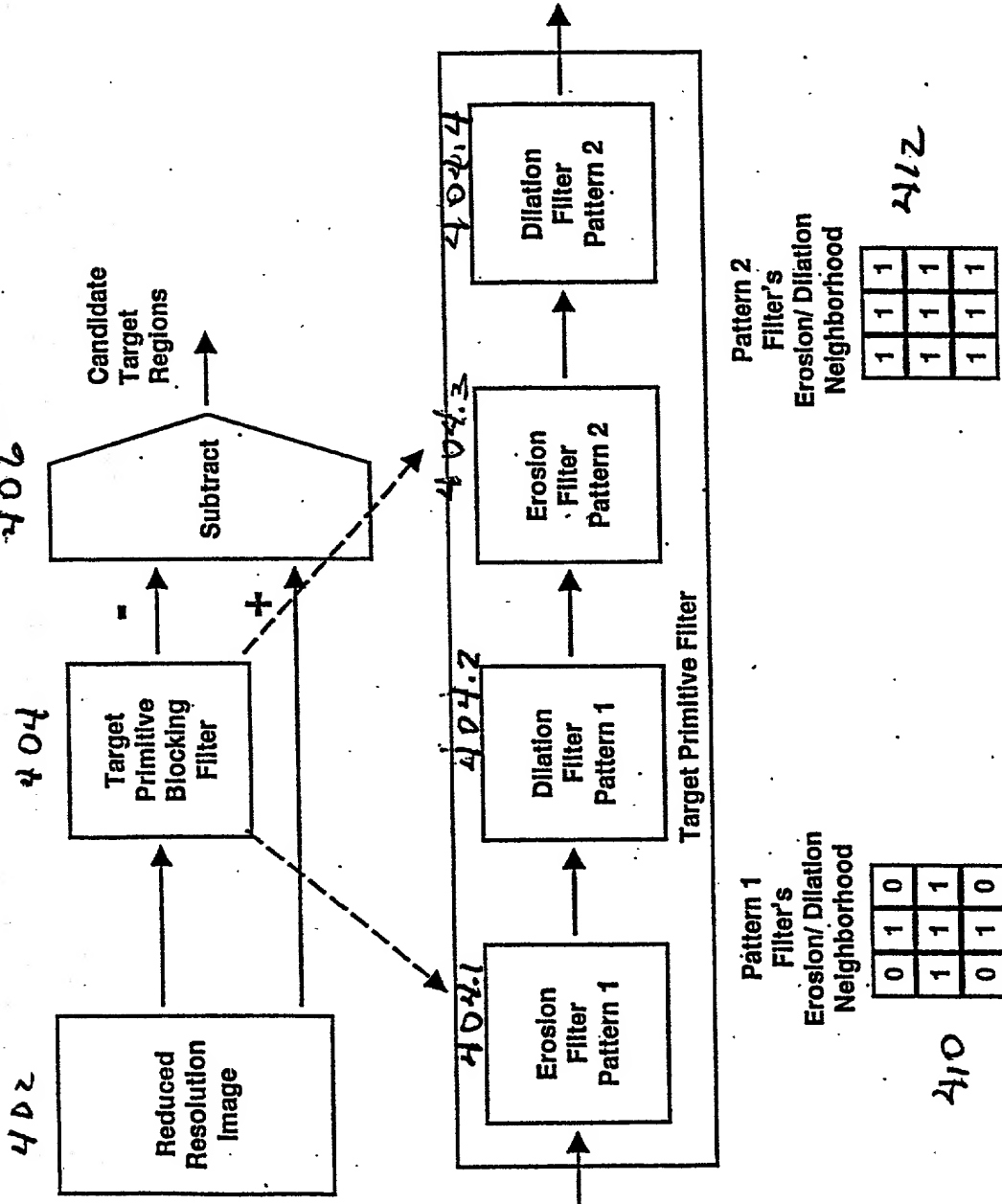


FIG. 4

### Filter Pattern 1

$$\begin{array}{c} \text{Input Image} \\ \text{Pixels} \end{array} \begin{array}{|c|c|c|} \hline a & b & c \\ \hline d & e & f \\ \hline g & h & i \\ \hline \end{array} \begin{array}{c} \ominus \\ \text{Erosion} \\ \text{Neighborhood} \end{array} \begin{array}{|c|c|c|} \hline 0 & 1 & 0 \\ \hline 1 & 1 & 1 \\ \hline 0 & 1 & 0 \\ \hline \end{array} = \begin{array}{c} \text{Output Image} \\ \text{Pixels} \end{array} \begin{array}{|c|c|c|} \hline a' & b' & c' \\ \hline d' & e' & f' \\ \hline g' & h' & i' \\ \hline \end{array} \begin{array}{c} \text{503} \\ \text{where } e' = \text{Minimum of } \{b, d, e, f, h\} \end{array}$$

### Filter Pattern 2

$$\begin{array}{c} \text{Input Image} \\ \text{Pixels} \end{array} \begin{array}{|c|c|c|} \hline a & b & c \\ \hline d & e & f \\ \hline g & h & i \\ \hline \end{array} \begin{array}{c} \ominus \\ \text{Erosion} \\ \text{Neighborhood} \end{array} \begin{array}{|c|c|c|} \hline 1 & 1 & 1 \\ \hline 1 & 1 & 1 \\ \hline 1 & 1 & 1 \\ \hline \end{array} = \begin{array}{c} \text{Output Image} \\ \text{Pixels} \end{array} \begin{array}{|c|c|c|} \hline a' & b' & c' \\ \hline d' & e' & f' \\ \hline g' & h' & i' \\ \hline \end{array} \begin{array}{c} \text{506} \\ \text{507} \end{array}$$

FIG. 5A

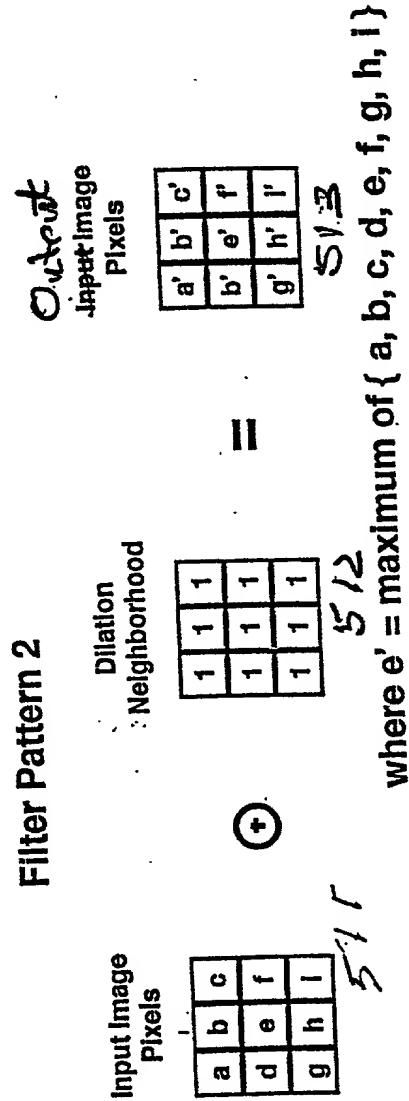
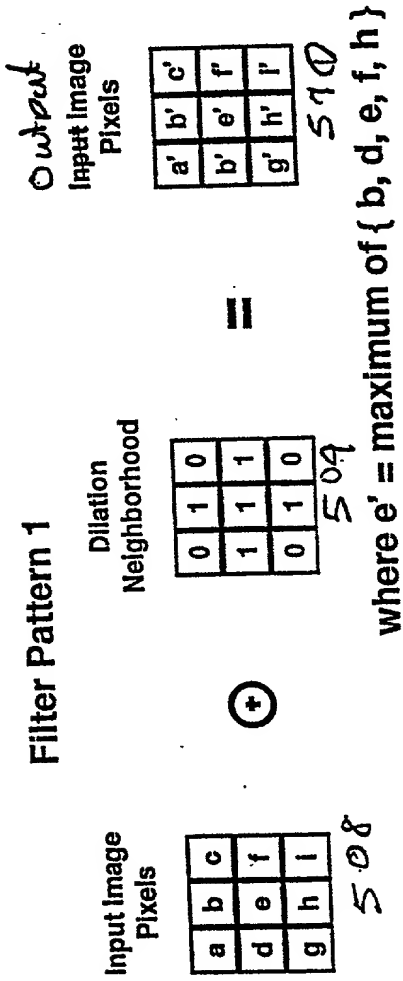


FIG. 5B

FOSTER 04092660

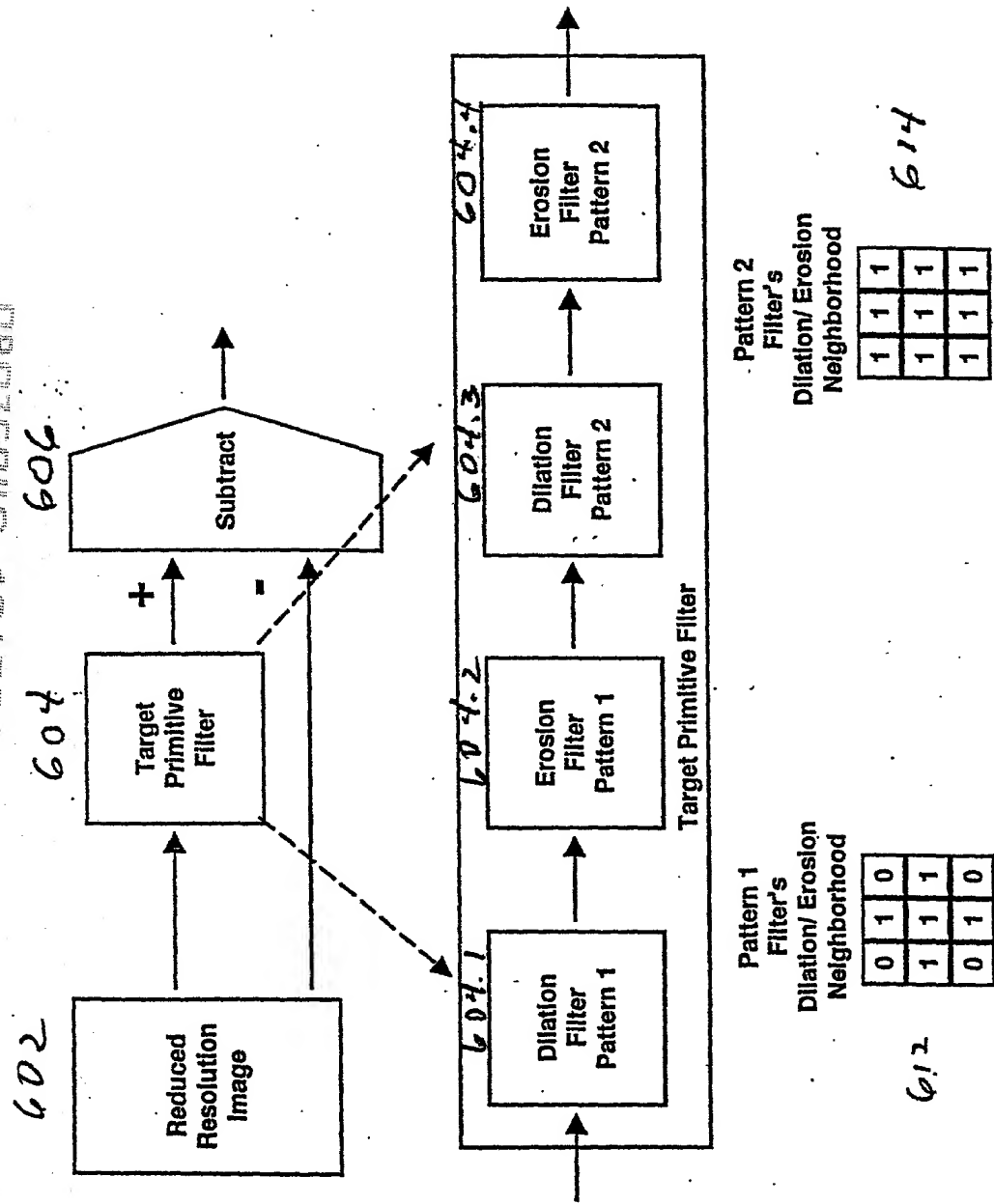


FIG. 6

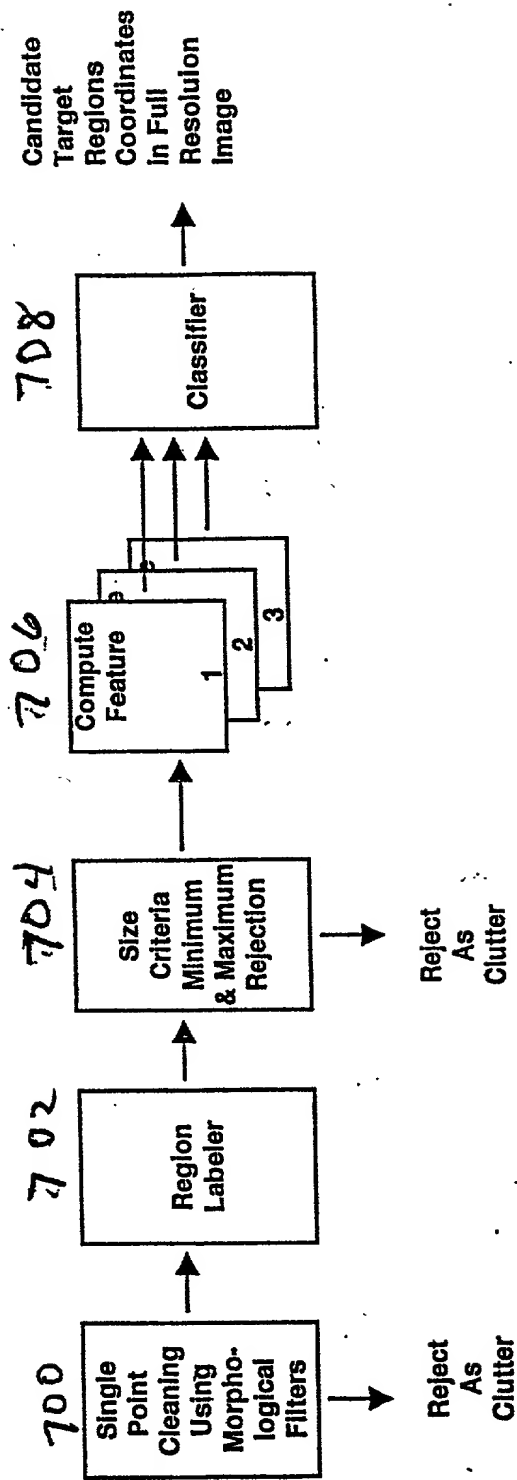


FIG. 7